



JavaOne™

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# There Is Business in Java and IoT [CON4075]

Rainer Eschrich  
M2M Lead Europe  
Java Sales Team  
Oct. 2015

# Disclaimer

The following is intended to outline our general product direction. It is intended for information purposes only, and may not be incorporated into any contract. It is not a commitment to deliver any material, code, or functionality, and should not be relied upon in making purchasing decisions. The development, release, and timing of any features or functionality described for Oracle's products remains at the sole discretion of Oracle.

# Rainer's Goal/Agenda

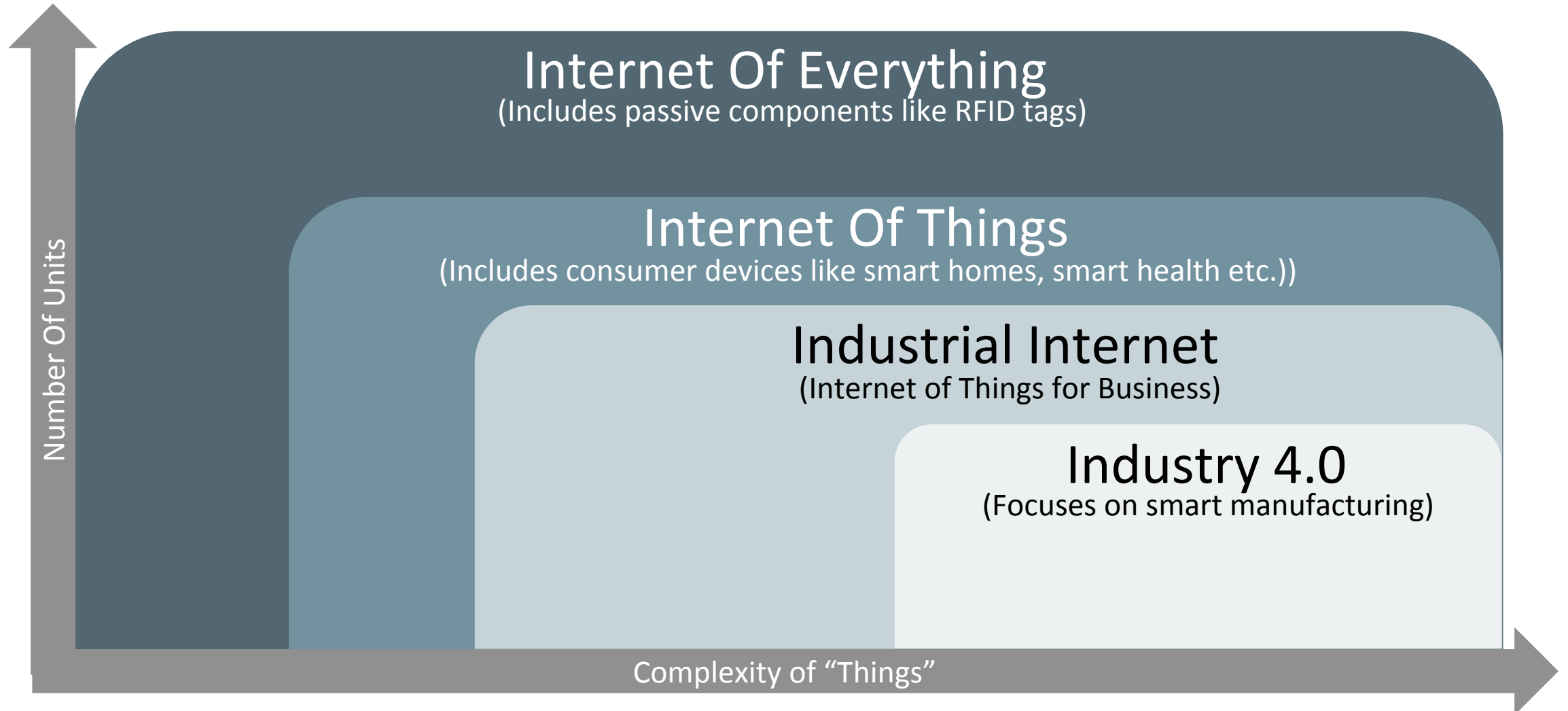
- **Goal: convince you to invest your to start developing for IoT**
- **Content:**
  - **Why IoT is Important**
    - And some numbers
  - **Why the Industry is doing it**
    - And what kind of projects ARE done TODAY
  - **Why you as a Java developer are well positioned to take advantage of this!**



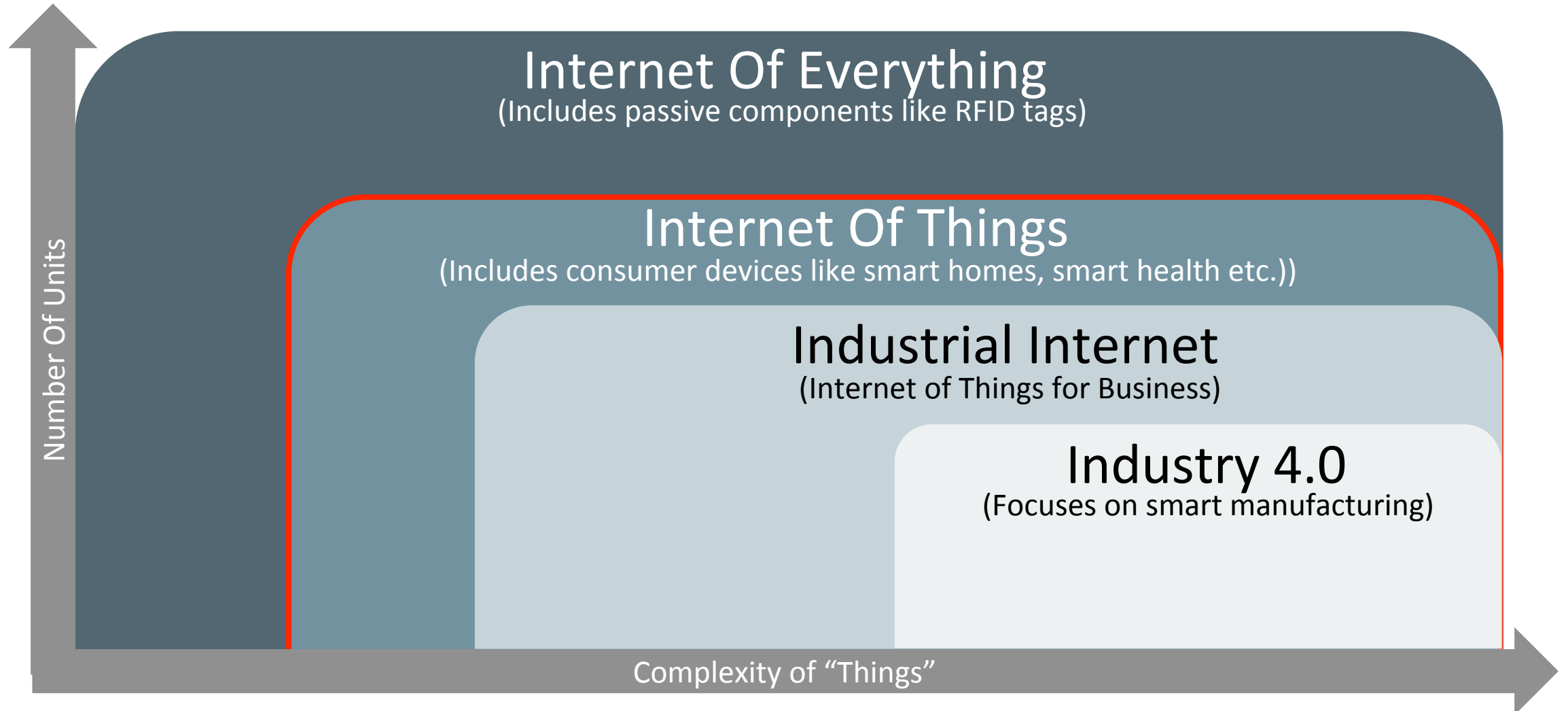
# Defintions



# Wording



# Wording

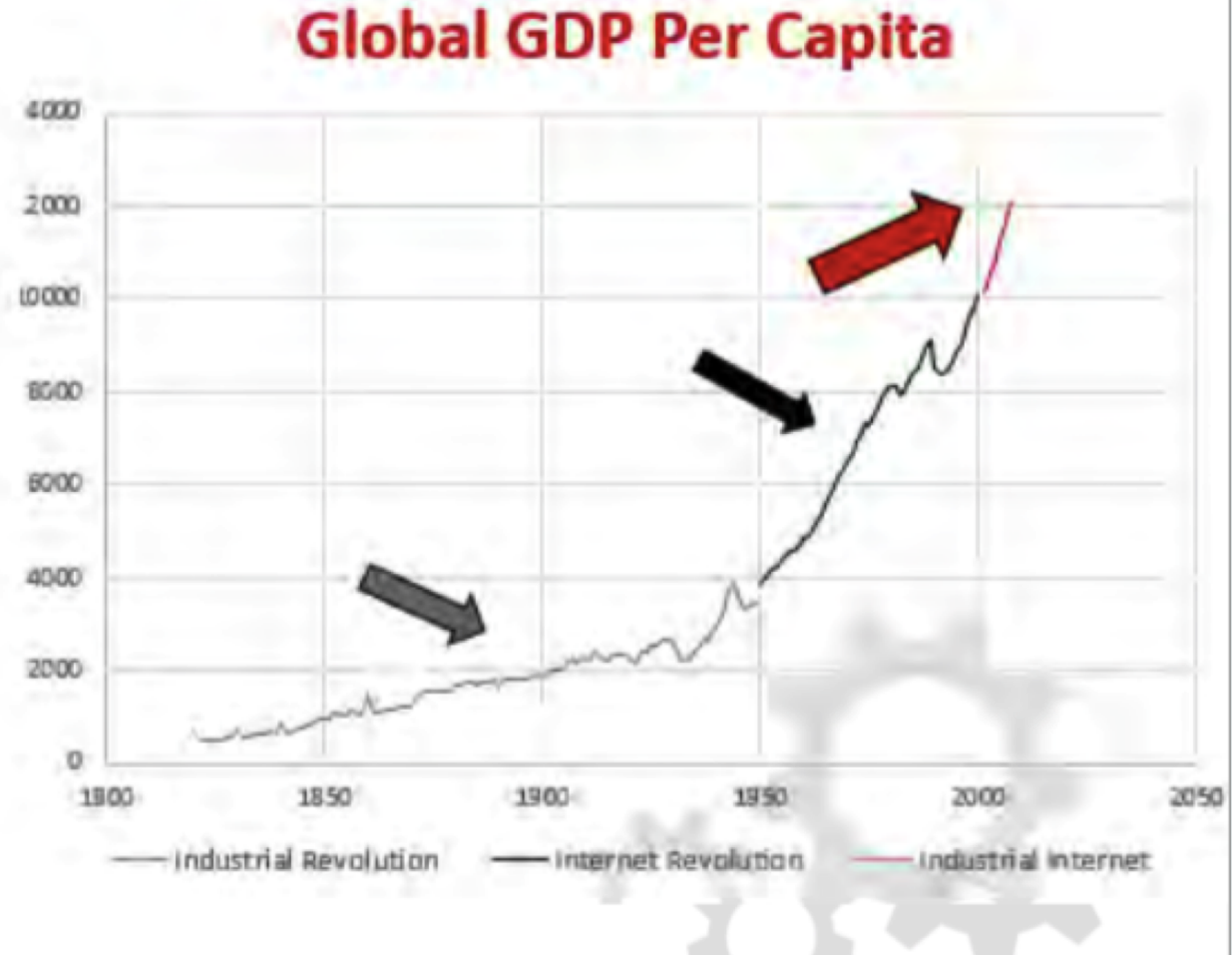
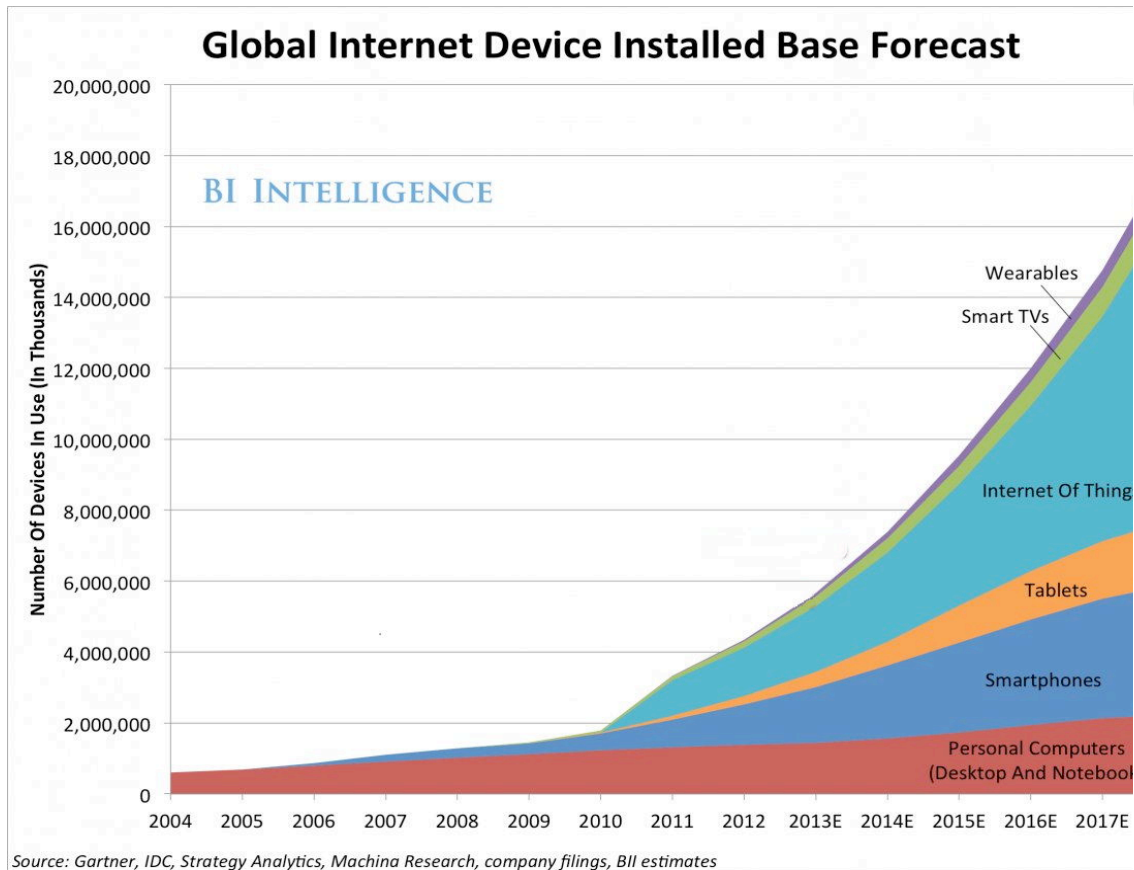




# Why Is IoT Important



# The Numbers Game (1)



# Classical Industrial Production

## Production Step 1: Market Analysis

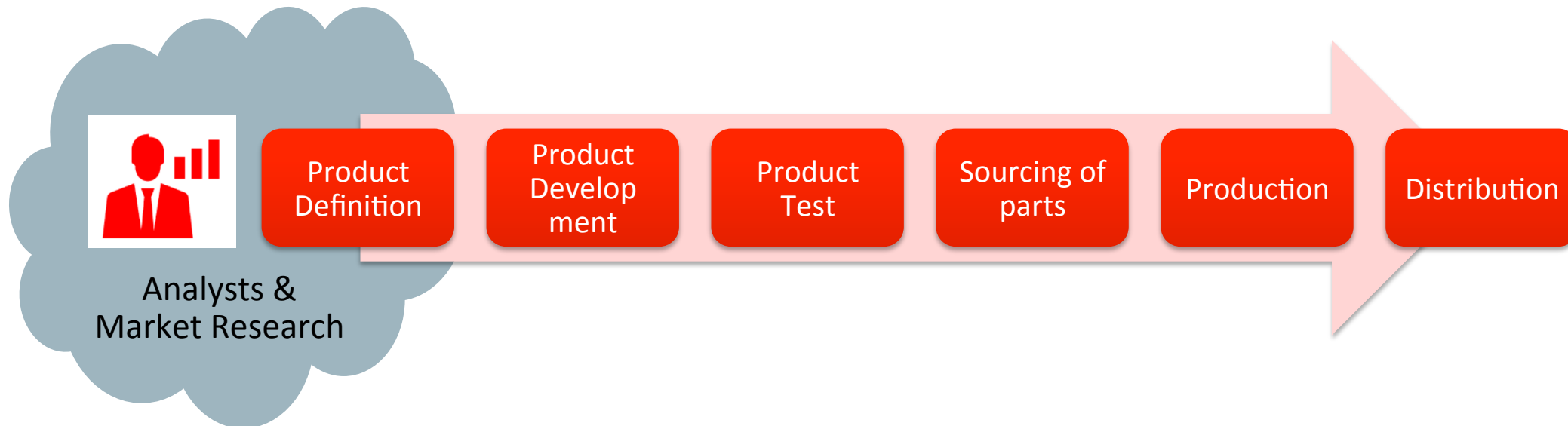


Analysts &  
Market Research



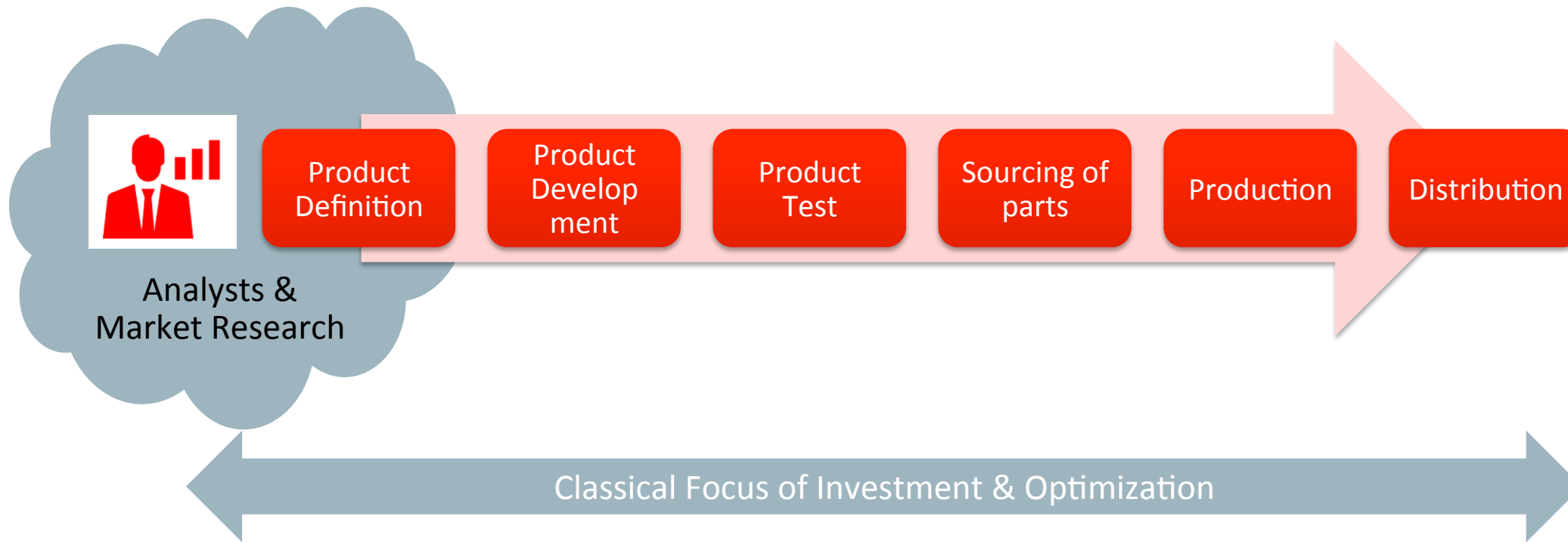
# Classical Industrial Production

## Production Step 2: Product development & production



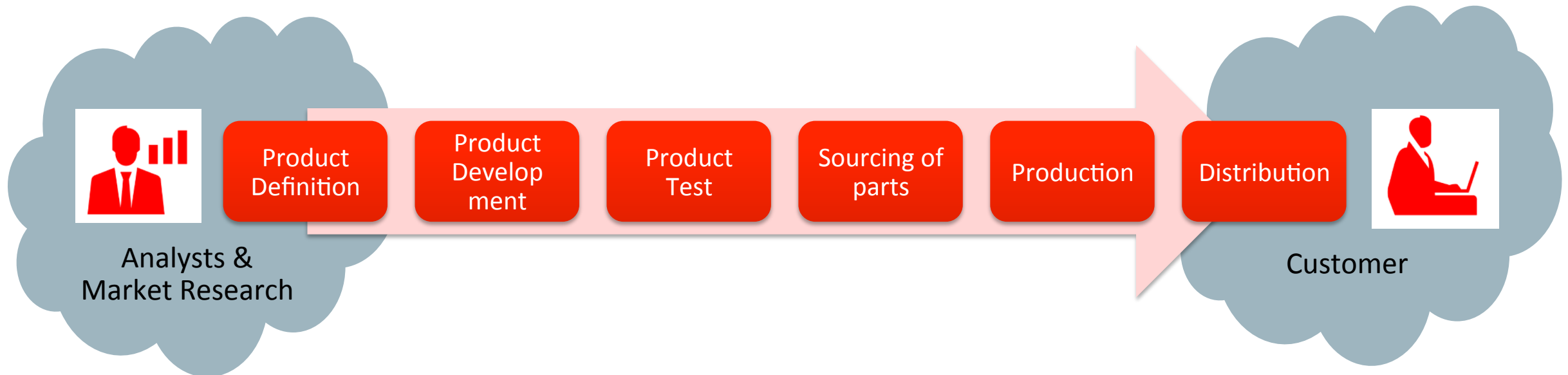
# Classical Industrial Production

## Production Step 2: Product development & production & distribution



# Classical Industrial Production

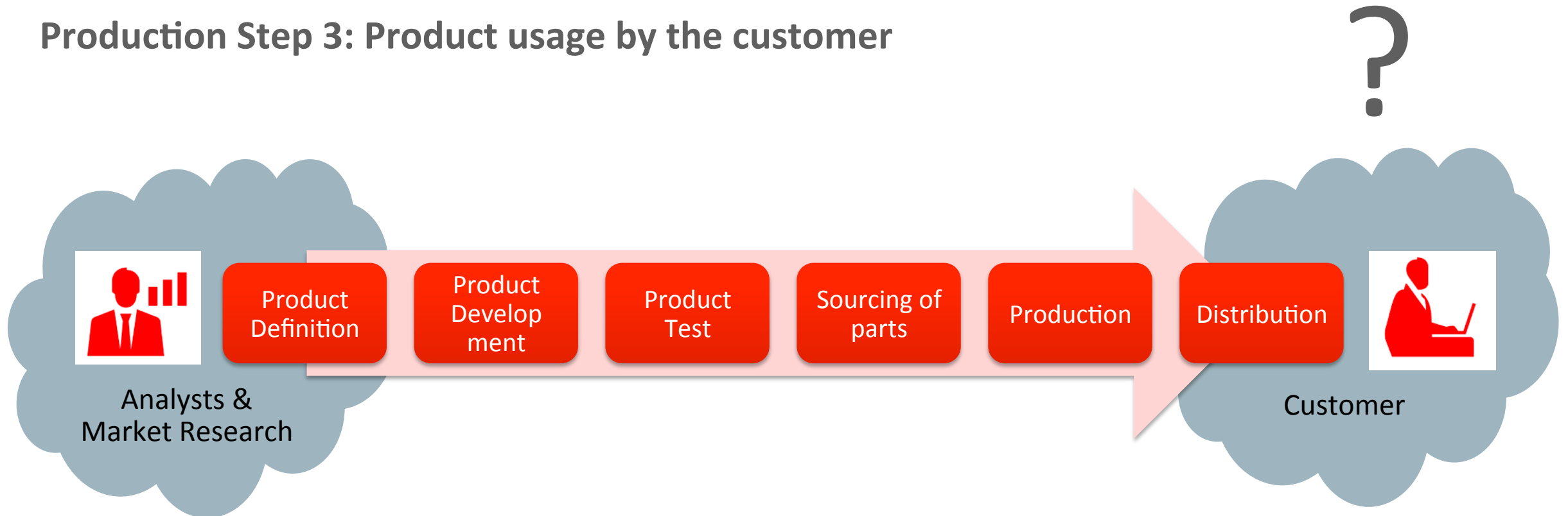
## Production Step 3: Product usage by the customer





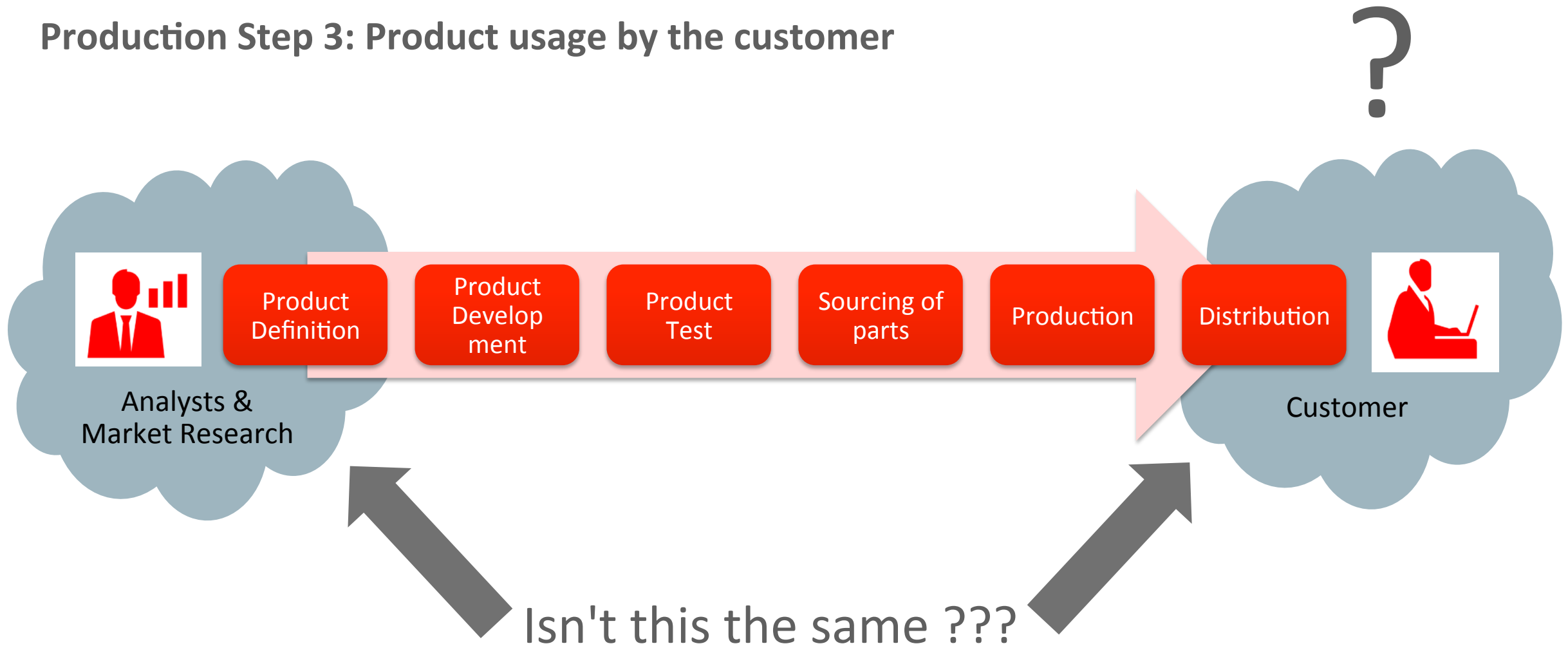
# Classical Industrial Production

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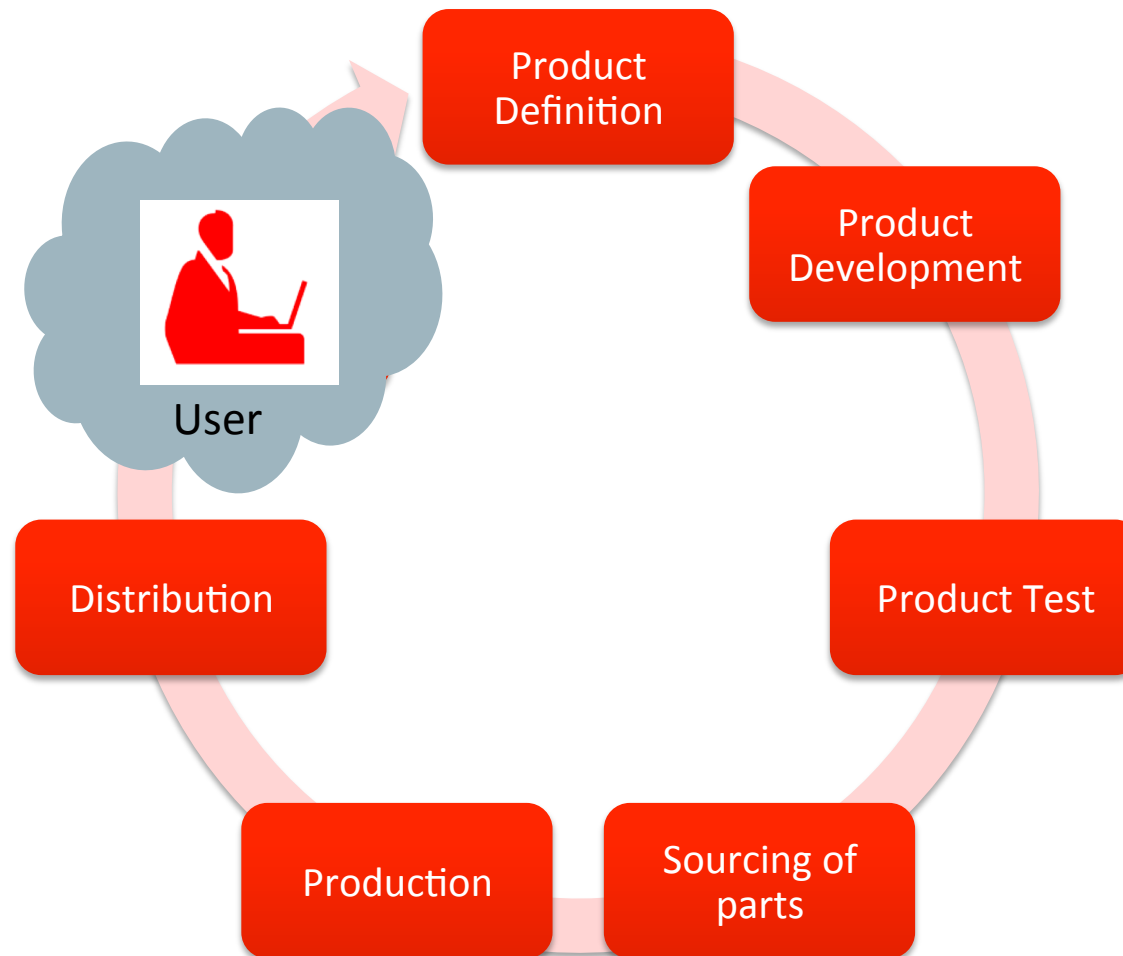


# Classical Industrial Production

## Production Step 3: Product usage by the customer

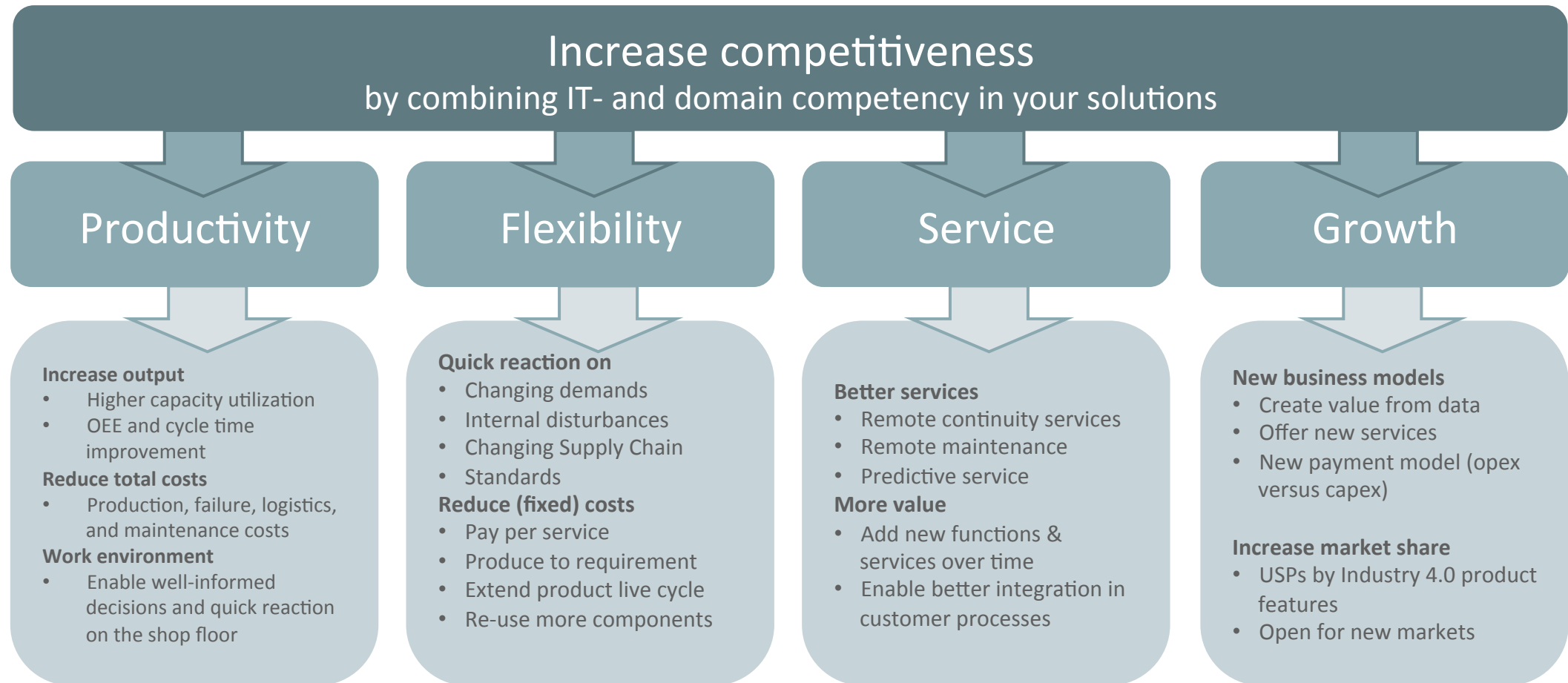


# IoT based Industrial Production



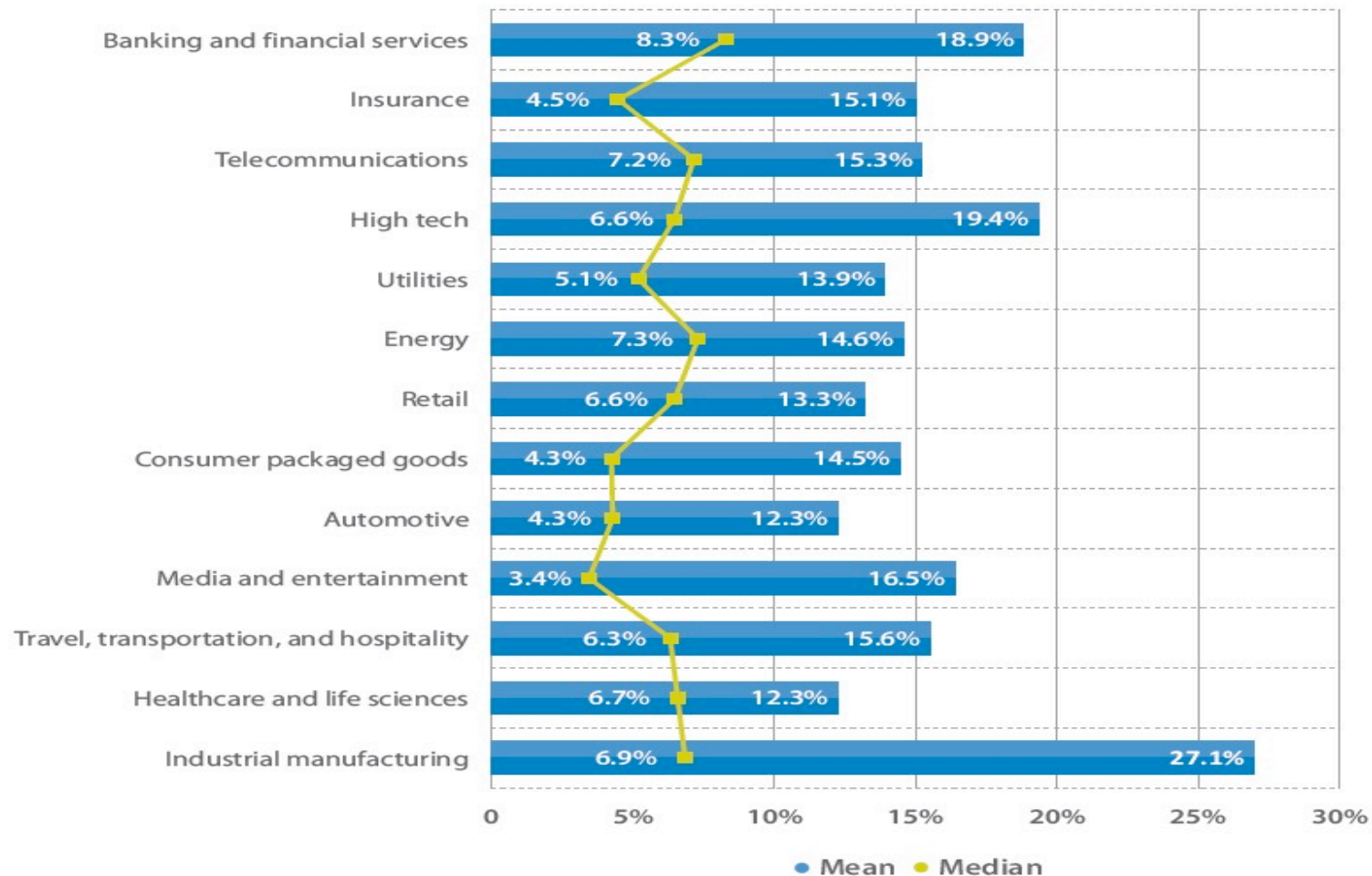


# IoT Increases Competitiveness



# IoT Impacts All Markets

Q14 (Industries): Revenue Impact of IoT Initiatives by 2018 (vs. 2015)

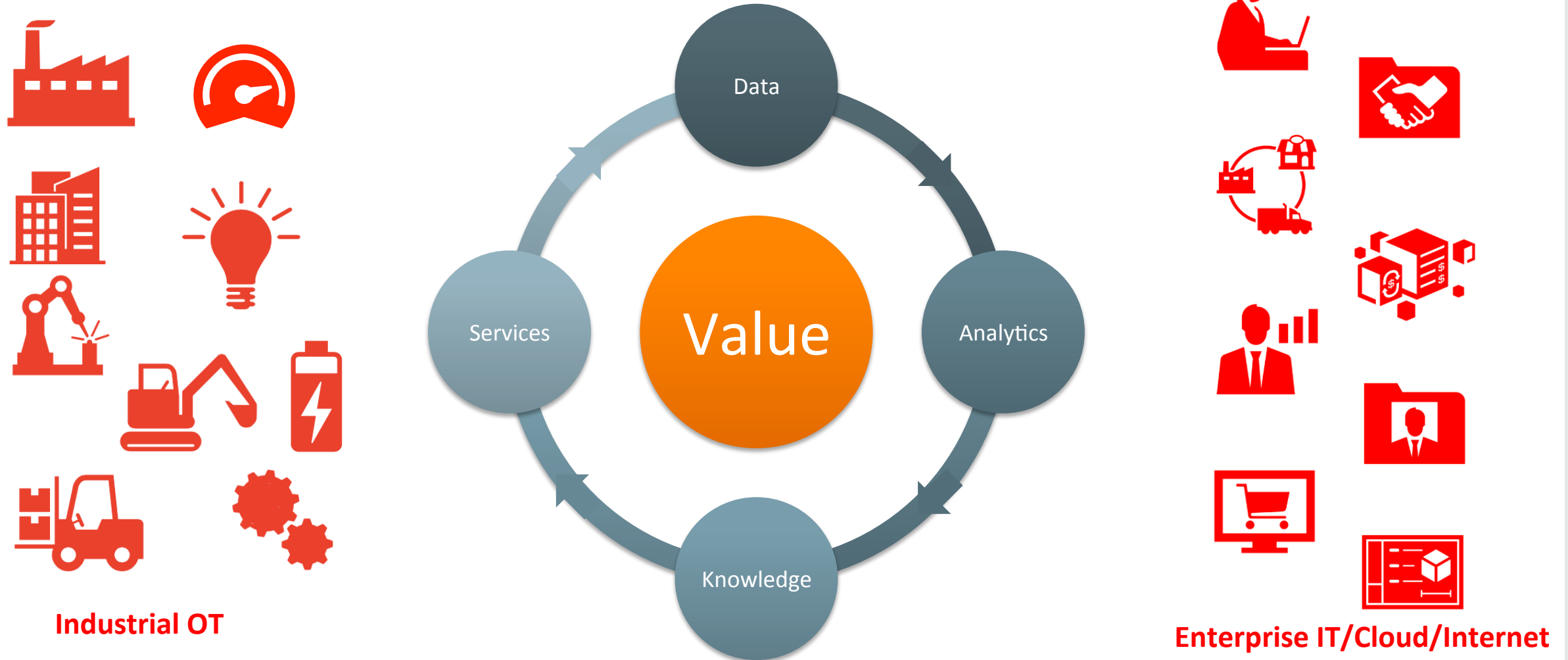


Forbes.com

# New IoT Services

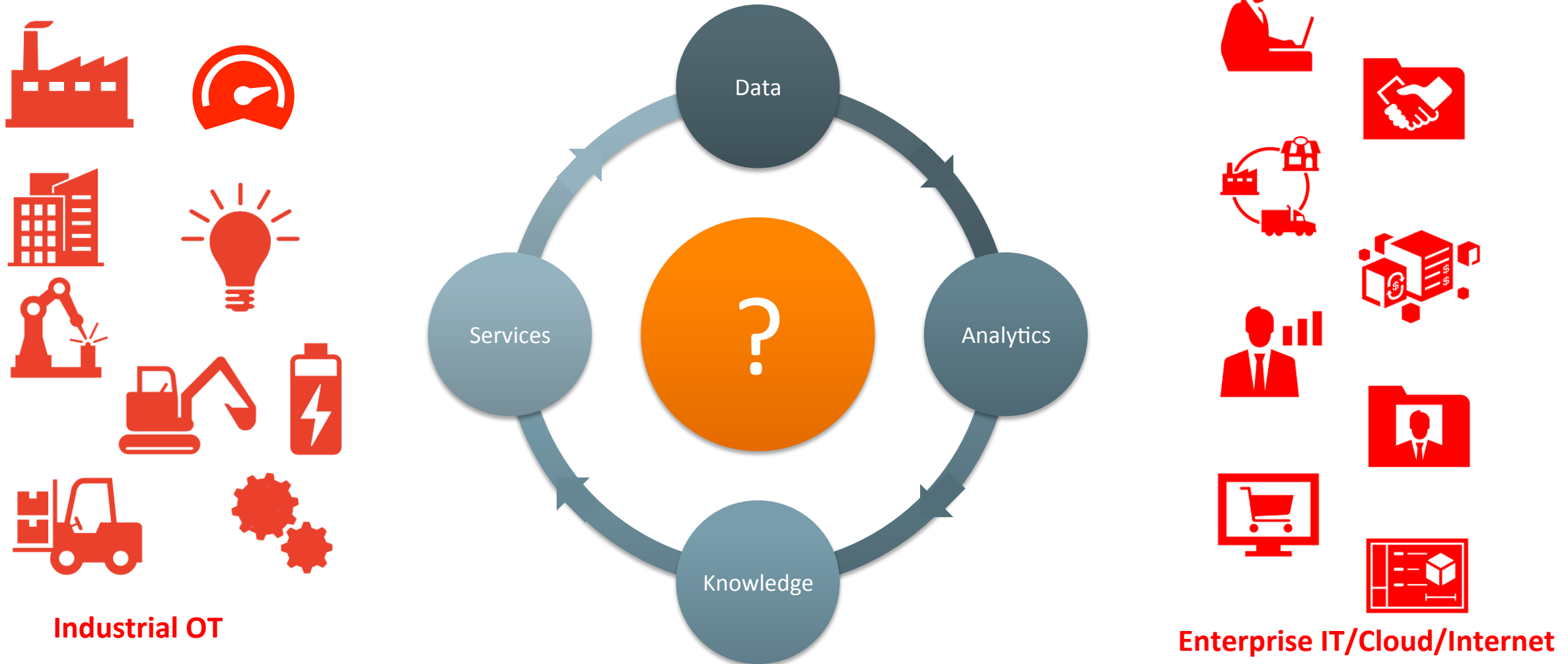


# Value Is Created By Translating Data Into Services



*As big as Internet of Things could be, the only real way to measure its value is by developer counts, not sensor counts.*

Matt Asay VP of mobile at Adobe Jun 27, 2014





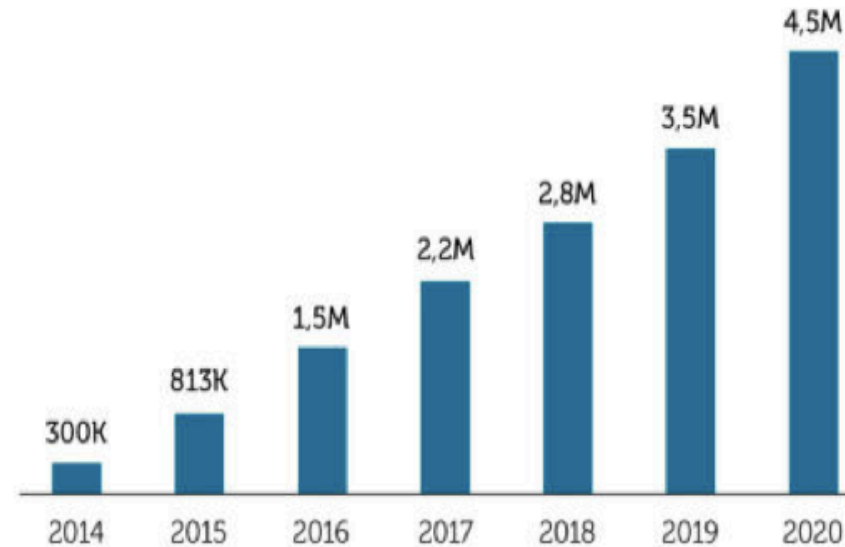
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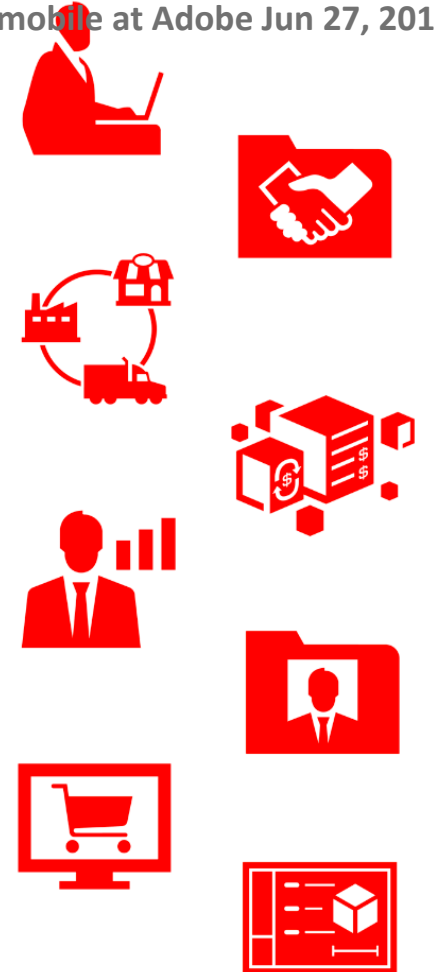


Industrial OT

## THE NUMBER OF IOT DEVELOPERS 2014-2020



Source: VisionMobile estimates, 2014



Enterprise IT/Cloud/Internet

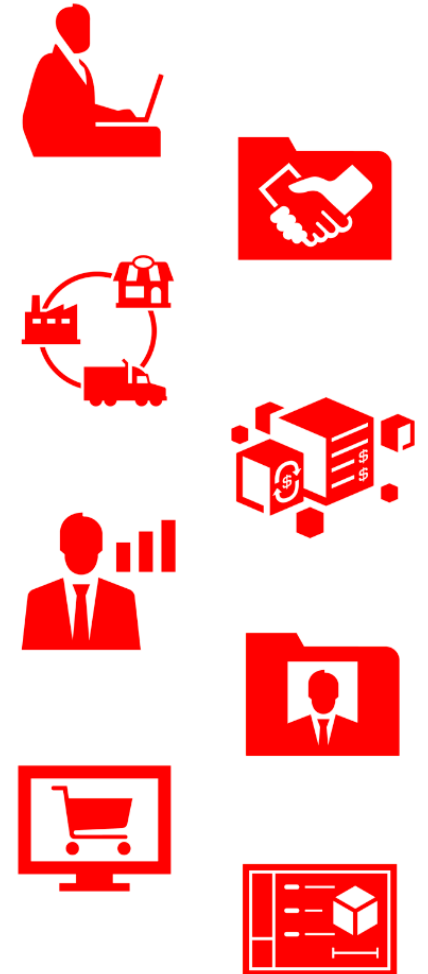
# The Big Divide



Industrial OT

Separate software worlds  
with 20+ years of  
optimizations and  
software practices  
& standards

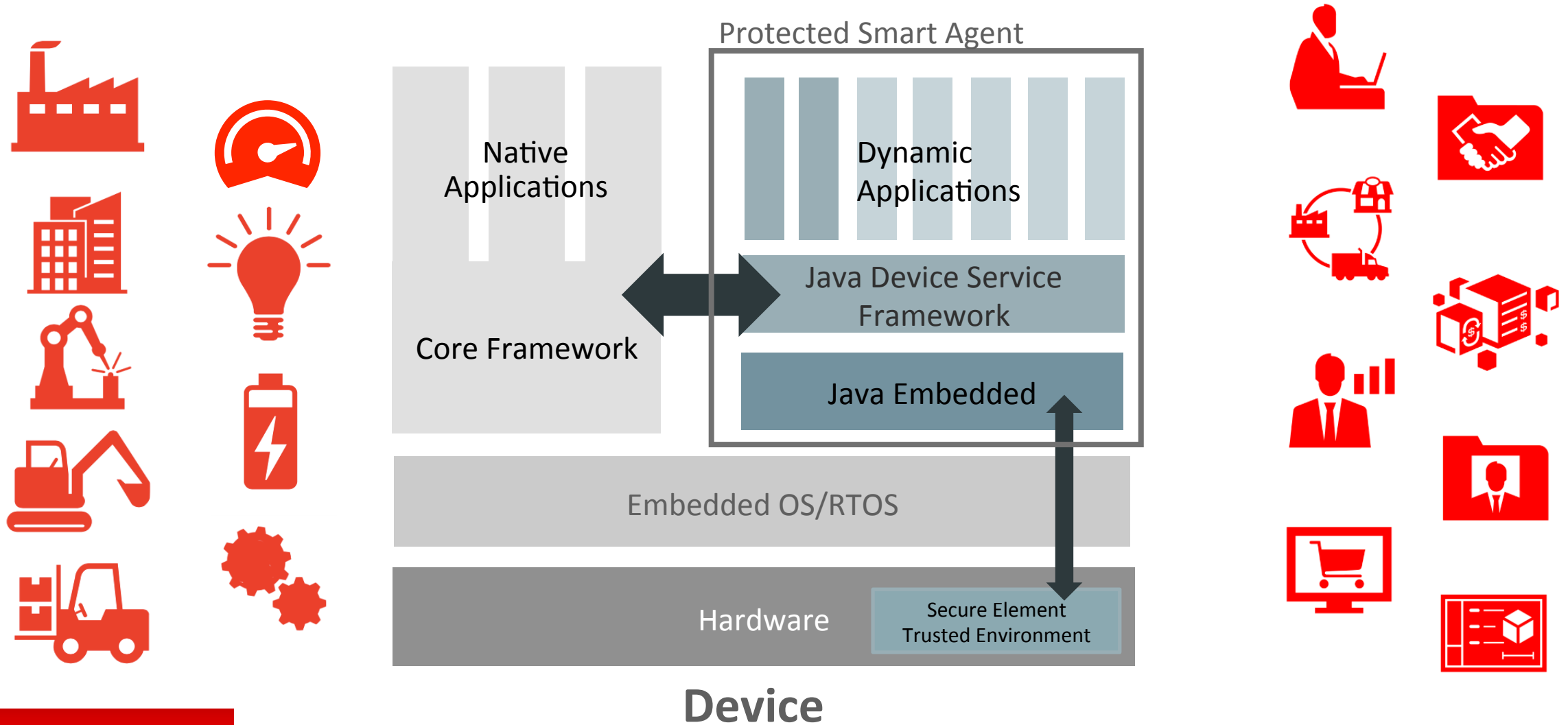
Technology, Processes & Metaphors



Enterprise IT/Cloud/Internet

# Java To The Rescue

## The Smart Agent in The Cyber Physical Environment



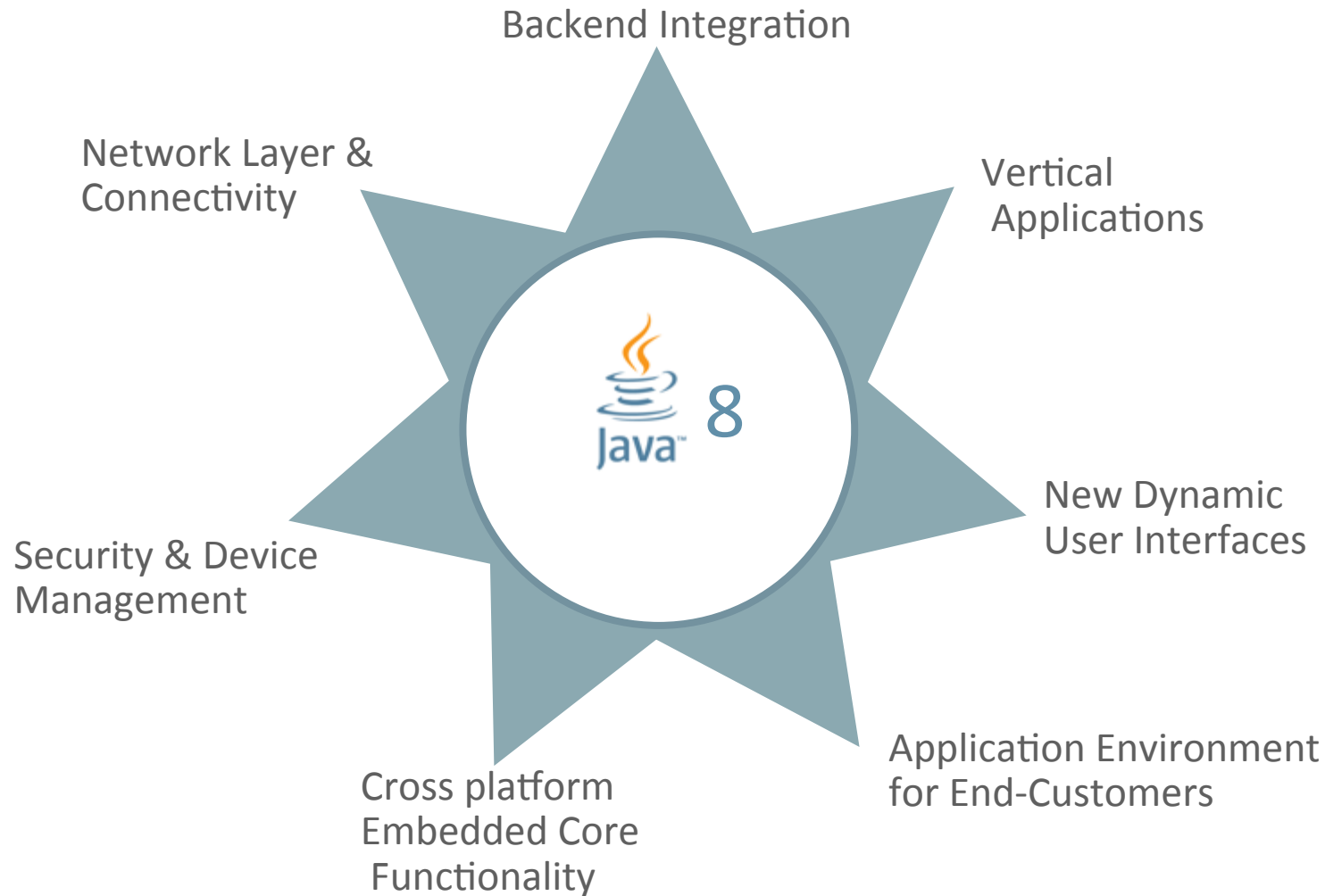
# And Why Java

## From a Industrial Customers Point Of View?

- It is NOT primary about the features of Java
- Customers like:
  - Relative easy to integrate in devices
  - Ready for enterprise, web & cloud integration
  - Flexibility
  - The huge & productive developer base
  - Scalability on devices and 'End to End'
  - Reliability



# Java Opens Up Possibilities



IT IS REAL

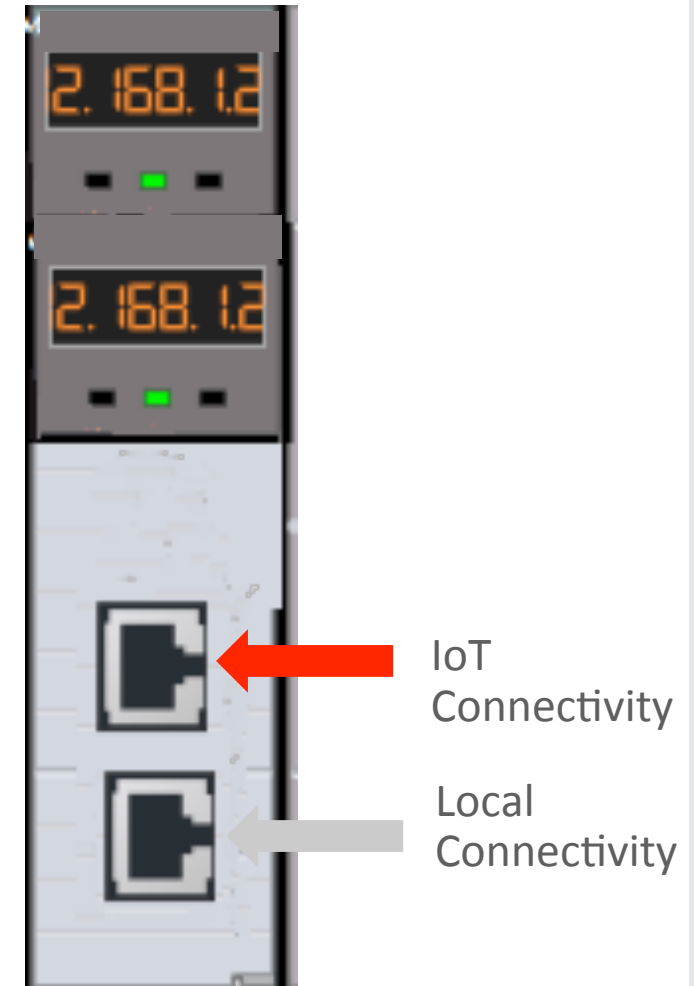




# Backend Integration

## A PLC That Talks With The Cloud

- What:
  - The PLC Data Stream can be analyzed locally, processed and exposed to the business
- Why:
  - Enables flexible integration between the manufacturing part and the business part
  - Expose new internal states to enterprise business side
  - Allow new type of programmers to access and program logic
    - Go beyond PLC coding
- Business Benefit
  - Sell more PLCs
  - Enable 'PLC as a service' model



Java SE

# Application Environment for End-Customers

## Let Lights Be Intelligent

- What
  - New low cost Industrial Lighting Control with an development environment for the end customer
- Why
  - Enable Customers to create lighting patterns
  - Attract new type of developers that can program new stuff with using higher system functionality
- Business Benefits
  - Lower cost of inhouse development
  - Sell atmosphere not light control



Java ME

# Cross platform Embedded Core Functionality

## Let A Car Have An Intelligent Application Platform

- What
  - After market dongle for the Car OBU
  - Complete Core software platform to access relevant car data in a secure way enables App Store model
- Why
  - Deliver complete platform for third party service providers
- Business Benefits
  - Enables new business models and functionality
  - One system for all third parties



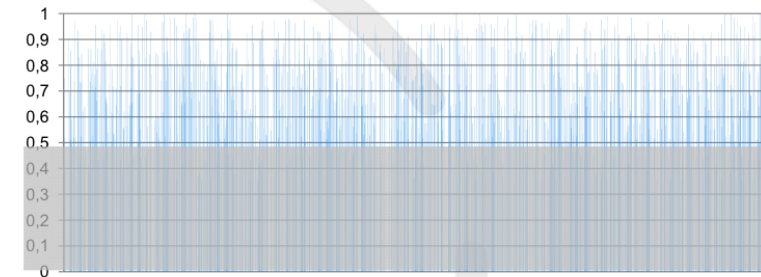
Java SE

# Network Layer & Connectivity

## Reliable Telematics Data Connectivity

- What
  - Implementation of an End To End Telematics solution in Java
- Why
  - Use a symmetric pure Java implementation with MQTT Client and MQTT Broker code
  - Implement Service Provider Interfaces (SPIs) to adapt node specific properties
- Business Benefits
  - Reduced testing effort
  - Allow adoption to different connectivity topology
  - Re-use of solution for many use cases

Received Signal Strength Indication For 3G Data Transfer (RSSI)



Java SE

# Social Robots

## From Action To Interaction

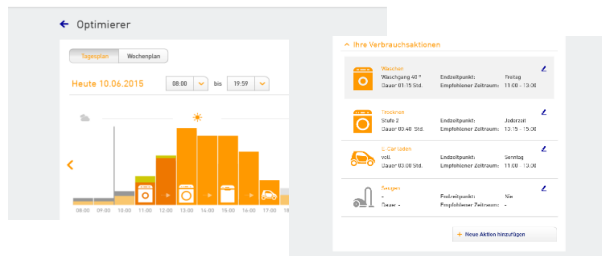
- What
  - Add a new software layer/platform to robotic system
- Why
  - Sensor data adds more complexity to the applications. Object Oriented Design helps us to deal with this complexity
- Business Benefits
  - New Use Cases & Markets
  - More Value
  - Better Competitiveness



Bridging the Worlds of IT and Robotics

KUKA Laboratories GmbH | S. 29 | C. Tarragona, G. Dörner | 03.09.2014

# The EnergyBASE Services



## I. Transparency, Security & Privacy

- Mini SCADA-System: Performance Monitoring, Device Monitoring & Control
- Security and Privacy  
→ Local data storage and processing!

Basic-Service

## II. Energy Efficiency

- Self-learning intelligent algorithms, forecasts
- Optimization suggestions (user configurable)
- Updates, Backup, Remote access

Optimizer-Service

## ... additional Services...

- EV-Integration, Virtual Power Plant (VPP), CHP-Integration, Assisted Living (AL), ...

NEW Service



# Conclusions



# Summary

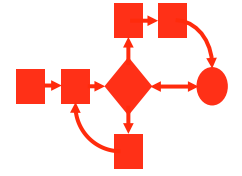
- **Industrial Internet opportunity ( \$32.3 Trillion ) 46% share of global economy today** (World Bank, 2011 and General Electric)
- **4.5 Millions IoT Developers Needed by 2020** (Vision Mobile 2014)
- **You are at the right time at the right place .... Start hacking**



Scale



Integration



Distribution



Lifecycle



Security



Customer Experience

Q & A



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